IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

IMAGE PROCESSING TECHNOLOGIES, LLC,	§ § §	
Plaintiff,	§ §	
v.	§ §	CASE NO. 2:16-CV-505
	§ §	
SAMSUNG ELECTRONICS CO., LTD.; SAMSUNG ELECTRONICS AMERICA, INC.	§ § §	
	§ §	
Defendants.	§	

MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Plaintiff Image Processing Technologies, LLC ("Plaintiff") (Dkt. No. 133, filed on April 14, 2017), the response of Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. ("Defendant") (Dkt. No. 138, filed on April 28, 2017), and the reply of Plaintiff (Dkt. No. 148, filed on May 5, 2017). The Court held a claim construction hearing on June 2, 2017. Having considered the arguments and evidence presented by the parties at the hearing and in their claim construction briefing, the Court issues this Claim Construction Order.

Table of Contents

I. BACKGROUND

Plaintiff brings suit alleging infringement of United States Patent Nos. 6,717,518 ("the '518 patent"), 6,959,293 ("the '293 patent"), 7,650,015 ("the '015 patent"), 8,805,001 ("the '001 patent"), 8,983,134 ("the '134 patent"), and 8,989,445 ("the '445 patent") (collectively the "patents-in-suit") by the Defendant.

The '015, '001, '134, and '445 patents are related and share the specification, and are generally referred to collectively as "the '015 patent family." In particular, the '001 patent is a continuation of the application leading to the '015 patent, the '134 patent is a continuation of the application leading to the '001 patent, and the '445 patent is a continuation of a continuation of the application leading to the '001 patent. Each of the patents in the '015 patent family is entitled "Image Processing Method." The application leading to the '015 patent was filed on February 20, 2007, is based on a series of earlier U.S. patent applications with an earliest priority date of September 13, 1999, which itself claims priority to an earlier filed PCT application filed on July 22, 1997, which itself claims priority to a French application filed on July 26, 1996. The '015 patent issued on January 19, 2010. The application leading to the '001 patent was filed on November 17, 2009 and issued on August 12, 2014. The application leading to the '134 patent was filed on March 17, 2014 and issued on March 17, 2015. The application leading to the '445 patent was filed on August 13, 2014 and issued on March 24, 2015. In general, the '015 patent family is directed to an image processing method and apparatus for face and/or object detecting and tracking using histograms of the image. The Abstract of the '015 patent states:

> A method and apparatus for localizing an area in relative movement and for determining the speed and direction thereof in real time is disclosed. Each pixel of an image is smoothed using its own time constant. A binary value corresponding to the existence of a significant variation in the amplitude of the smoothed pixel from the prior frame, and the amplitude of the variation, are determined, and the time

constant for the pixel is updated. For each particular pixel, two matrices are formed that include a subset of the pixels spatially related to the particular pixel. The first matrix contains the binary values of the subset of pixels. The second matrix contains the amplitude of the variation of the subset of pixels. In the first matrix, it is determined whether the pixels along an oriented direction relative to the particular pixel have binary values representative of significant variation, and, for such pixels, it is determined in the second matrix whether the amplitude of these pixels varies in a known manner indicating movement in the oriented direction. In each of several domains, histogram of the values in the first and second matrices falling in such domain is formed. Using the histograms, it is determined whether there is an area having the characteristics of the particular domain. The domains include luminance, hue, saturation, speed (V), oriented direction (D1), time constant (CO), first axis (x(m)), and second axis (y(m)).

Asserted claim 6 of the '015 patent is shown below:

> A process of tracking a target in an input signal implemented using a system comprising an image processing system, the input signal comprising a succession of frames, each frame comprising a succession of pixels, the target comprising pixels in one or more of a plurality of classes in one or more of a plurality of domains, the process performed by said system comprising, on a frame-by-frame basis: forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains, said at least one histogram referring to classes defining said target, identifying the target from said at least one histogram, drawing a tracking box around the target, and centering the tracking box relative to an optical axis of the frame.

The application leading to the '293 patent was filed on February 23, 2001, claims priority to a French patent application filed on February 24, 2000, and issued on October 25, 2005. The '293 patent is entitled "Method and Device for Automatic Visual Perception." In general, the '293 patent is directed to detecting/analyzing an event by the formation of a histogram. The Abstract of the '293 patent states:

> A visual perception processor comprises histogram calculation units, which receive the data DATA(A), DATA(B), . . . DATA(E) via a single data bus and supplying classification information to a single time coincidences bus. In a preferred embodiment the histogram calculation units are organized into a matrix.

Claim 1 of the '293 patent is shown below:

4

A visual perception processor for automatically detecting an event occurring in a multidimensional space (i, j) evolving over time with respect to at least one digitized parameter in the form of a digital signal on a data bus, said digital signal being in the form of a succession aijT of binary numbers associated with synchronization signals enabling to define a given instant (T) of the multidimensional space and the position (i, j) in this space, the visual perception processor comprising:

the data bus;

a control unit

a time coincidences bus carrying at least a time coincidence signal; and

at least two histogram calculation units for the treatment of the at least one parameter,

the histogram calculation units being configured to form a histogram representative of the parameter as a function of a validation signal and to determine by classification a binary classification signal resulting from a comparison of the parameter and a selection criterion C, wherein the classification signal is sent to the time coincidences bus, and wherein the validation signal is produced from time coincidences signals from the time coincidence bus so that the calculation of the histogram depends on the classification signals carried by the time coincidence bus.

The application leading to the '518 patent was filed on February 9, 2001, is based on an earlier filed PCT application filed on January 15, 1999, which itself claims priority to a French application filed on January 15, 1998. The '518 patent issued on April 6, 2004. The '518 patent is entitled "Method and Device for Automatic Visual Perception." In general, the '518 patent is directed to detecting the drowsiness of a person based on analyzing the person's face. The Abstract of the '518 patent states:

In a process of detecting a person falling asleep, an image of the face of the person is acquired. Pixels of the image having characteristics corresponding to an eye of the person are selected and a histogram is formed of the selected pixels. The histogram is analyzed over time to identify each opening and closing of the eye, and characteristics indicative of the person falling asleep are determined. A sub-area of the image including the eye may be determined by identifying the head or a facial characteristic of the person, and then identifying the sub-area using an anthropomorphic model. To determine openings and closings of the eyes, histograms of shadowed pixels of the eye are analyzed to determine the width and

5

height of the shadowing, or histograms of movement corresponding to blinking are analyzed. An apparatus for detecting a person falling asleep includes a sensor for acquiring an image of the face of the person, a controller, and a histogram formation unit for forming a histogram on pixels having selected characteristics. Also disclosed is a rear-view mirror assembly incorporating the apparatus.

Claim 1 of the '518 patent is shown below:

1. A process of detecting a person falling asleep, the process comprising:

acquiring an image of the face of the person;

identifying a sub-area of the image comprising at least one eye of the person, including:

identifying the head of the person in the image; and

identifying the sub-area of the image using an anthropomorphic model;

selecting pixels within the sub-area of the image having characteristics corresponding to characteristics of the at least one eye of the person;

forming at least one histogram of the selected pixels;

analyzing the at least one histogram over time to identify each opening and closing of the eye; and

determining from the opening and closing information of the eye, characteristics indicative of a person falling asleep.

The U.S. Patent & Trademark Office ("USPTO") instituted Inter Partes Review ("IPR) proceedings on five of the six patents-in-suit on May 25, 2017. *See, e.g.*, Dkt. No. 153 (Notice of Activity in Related IPR Proceedings). Some of the claim terms disputed between the parties are generally discussed in these grants. *Id.*

II. LEGAL PRINCIPLES

This Court's claim construction analysis is guided by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court reiterated that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

In claim construction, patent claims are generally given their ordinary and customary meaning, which "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312-13. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to, and intended to be read by, others skilled in the particular art. *Id.*

Despite the importance of claim terms, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* The written description set forth in the specification, for example, "may act as a sort of dictionary, which explains the invention and may define terms used in the claims." *Markman*, 52 F.3d at 979. Thus, as the *Phillips* court emphasized, the specification is "the primary basis for construing the claims." *Phillips*, 415 F.3d at 1314–17. However, it is the claims, not the specification, which set forth the limits of the patentee's invention. Otherwise, "there would

be no need for claims." *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc).

The prosecution history also plays an important role in claim interpretation as intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Phillips*, 415 F.3d at 1314–17; *see also Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that "a patentee's statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation"). In this sense, the prosecution history helps to demonstrate how the inventor and the United States Patent and Trademark Office ("PTO") understood the patent. *Id.* at 1317. Because the prosecution history, however, "represents an ongoing negotiation between the PTO and the applicant," it may sometimes lack the clarity of the specification and thus be less useful in claim construction. *Id.*

Courts are also permitted to rely on extrinsic evidence, such as "expert and inventor testimony, dictionaries, and learned treatises," *id.* (quoting *Markman*, 52 F.3d at 980), but *Phillips* rejected any claim construction approach that sacrifices the intrinsic record in favor of extrinsic evidence. *Id.* at 1319. Instead, the court assigned extrinsic evidence, such as dictionaries, a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula or particular sequence of steps. *Id.* at 1323–25. Rather, *Phillips* held that a court must attach the appropriate weight to the sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant. "In cases where . . . subsidiary facts are in dispute, courts will need to make subsidiary factual findings about [the] extrinsic evidence. These are the 'evidentiary underpinnings' of claim construction [discussed] in *Markman*, and this subsidiary factfinding must

be reviewed for clear error on appeal." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

The Supreme Court of the United States has "read [35 U.S.C.] § 112, ¶ 2 to require that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). "A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus,* 134 S. Ct. 2120.

III. CONSTRUCTION OF AGREED TERMS

The parties have agreed to the following meanings for the following terms. *See, e.g.*, Dkt. No. 150 (Joint Claim Construction Chart.); Dkt. No. 155 (Joint Notice).

TERM	AGREED CONSTRUCTION
"parameter" ('293 patent)	"a numerical characteristic [numerical characteristics]"
"classification value" ('445 patent)	"a value resulting from determining whether a pixel meets a selected classification criterion for a domain"
"tracking a target" ('445 patent; '001 patent, '015 patent, '134 patent)	The parties have agreed for purposes of this litigation that the preamble is limiting
"moving a center point of the outline" ('445 patent, claim 6)	"calculating new x and y coordinates of the center point of the outline"
"anthropomorphic model" ('518 patent)	"mathematical representation specifying the spatial relationship of human facial features"

Accordingly, the Court adopts the constructions agreed to by the parties as listed above.

IV. CONSTRUCTION OF DISPUTED TERMS

The parties' positions and the Court's analysis as to the disputed terms are presented below.

A. "histogram"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"a statistical representation of the frequency of occurrence of values of a 'parameter'"	"a statistical representation of the frequency of occurrence with which values of a parameter fall within defined intervals of the range of values of the parameter"

The disputed term "histogram" appears in claims in each of the patents-in-suit.

(1) The Parties' Positions

Plaintiff argues that the claim language and specification of the patents refers to calculating a histogram for/of a "parameter." *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at pages 2-3. Plaintiff argues that Defendant's construction would exclude embodiments that use non-continuous digital data. *Id.* at 3. Plaintiff also argue that nothing in the claim language or the specification requires the intervals of the histogram to be "defined." *Id.* Plaintiff argues that the specification makes clear that the intervals can be adapted in real-time, and therefore are not necessarily "defined." *Id.*

Defendant argues that the intrinsic evidence and textbooks on statistical methods confirm Defendant's proposal. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 2. According to Defendant, Plaintiff's construction would cover any statistical representation, including bar charts, scatter plots, and essentially any mechanisms that counts the occurrence of something. *Id.* Based on various extrinsic textbooks and dictionaries, Defendant argues that to form a histogram the intervals are defined within a range of values. *Id.* at 3. Defendant argues that the requirement that the range of values be divided into defined intervals is

what distinguishes histograms from other data representations. *Id.* at 3-4. Defendant argues that the specification supports its arguments, in that every parameter disclosed in the specifications takes on a range of values that is divided into defined intervals for forming the histogram. *Id.* at 4-5.

In its Reply, Plaintiff argues that a "range of values" is incorrect because it could exclude binary parameters disclosed in the specification. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 5. Plaintiff argues that by requiring a "histogram" to have "defined" intervals, Defendant's construction would improperly exclude adapting intervals in real-time and using variable-width intervals. *Id.* Plaintiff admits that a histogram has "intervals," but argues that the intrinsic evidence does not require those intervals to be "defined." *Id.* Plaintiff argues that its construction would not encompass bar charts or scatter plots. *Id.* at 5-6.

(2) Analysis

Both parties agree that the "histogram" term needs to be construed. Both parties agree that the term means "a statistical representation of the frequency of occurrence of values of a parameter," but disagree as to whether something "more" (as argued by the Defendant) is needed to accurately define the term "histogram." In particular, the parties dispute whether a histogram is merely any statistical representation, or more specifically, a statistical representation formed by dividing a parameter's range of values into defined intervals and counting how often the value of that parameter falls within each defined interval.

The "histogram" term appears in all of the patents-in-suit. The parties' arguments focus on the claim language, the specification, and extrinsic evidence.

Claim 1 of the '293 patent is representative, and is reproduced below in relevant part:

at least two **histogram** calculation units for the treatment of the at least one parameter,

the **histogram** calculation units being configured to form a **histogram** representative of the parameter as a function of a validation signal and to determine by classification a binary classification signal resulting from a comparison of the parameter and a selection criterion C, wherein the classification signal is sent to the time coincidences bus, and wherein the validation signal is produced from time coincidences signals from the time coincidence bus so that the calculation of the histogram depends on the classification signals carried by the time coincidence bus.

(emphasis added.) As a whole, the claims do not provide much (if any) guidance as to the parties' dispute.

Plaintiff does not rely on any technical dictionaries for its proposed construction. Defendant relies on numerous technical sources that support its proposed constructions. Those extrinsic sources generally require a histogram to be divided into intervals that are plotted along a horizontal axis and a vertical axis with the frequency of occurrence of values for that interval.

Both parties cite to different portions of the specifications that allegedly support their constructions. On balance, the Court is not persuaded by the Defendant's specification citations that the histogram must be "defined intervals" of the "range of values of the parameter." The Court is not convinced that the plain meaning of the "histogram" term requires such a construction. Further, the Court is not convinced that the language is appropriate or necessary based on the intrinsic record. To the extent Defendant's construction is based around an embodiment of the specification, the Federal Circuit has consistently held that "particular embodiments appearing in the written description will not be used to limit claim language that has broader effect." *Innova/Pure Water*, 381 F.3d at 1117.

On balance, the Court finds that Plaintiff's construction is too broad and would cover statistical representations that are not typically considered a histogram. Regarding the "intervals"

word as proposed by Defendant, the Court finds that there is no dispute that a "histogram" has "intervals." Indeed, Plaintiff admits that a histogram has "intervals," but argues that the intrinsic evidence does not require those intervals to be "defined." (*See* Plaintiff's Reply, Dkt. No. 148 at page 5.) While the inherent meaning of the term "histogram" clearly supports some type of "interval" for the parameter values, the Court rejects the "defined" intervals language proposed by the Defendant. Instead, the Court finds that the phrase "series of intervals" is appropriate based on the intrinsic and extrinsic evidence. Further, the Court is not convinced that the Defendant's proposed limitation that the intervals be in a "range of values" is a necessary or warranted limitation to the disputed term.

The Court hereby construes "histogram" to mean "**a statistical representation of the frequency of occurrence with which values of a parameter fall within a series of intervals**."

B. "time coincidence" terms

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"wherein the validation signal is produced from time coincidences signals from the time coincidence bus so that the calculation of the histogram depends on the classification signals carried by the time coincidence bus" ('293 patent, claim 1)	Plain and ordinary meaning	"wherein the validation signal is produced when two or more classification signals satisfy stored conditions at the same time"
"time coincidences unit" / "coincidence unit" ('293 patent, claim 3; claims 18, 22)	Plain and ordinary meaning	"unit that generates an enable signal when the outputs of two or more classification units satisfy stored conditions at the same time"

"enabling the calculating step when classified data satisfies predetermined time coincidence criteria" ('293 patent, claim 29)	Plain and ordinary meaning	"enabling the calculating step when the classified data satisfies two or more stored conditions at the same time"

The disputed "time coincidence" terms appear in claims 1, 3, 18, 22, and 29 of the '293 patent.

(1) The Parties' Positions

Plaintiff argues that the phrases are easily understood in the context of the surrounding claim language and do not require construction. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at pages 5, 7, 8. The terms are not limited to "two or more classification units," "stored conditions," or the "same time" as proposed by the Defendant, as those additional limitations do not appear in the claim. *Id.* at 6-8.

Defendant argues that the "coincidence" terms represent a key feature of the claimed system – the use of two or more classification signals to determine whether to include a particular pixel in the histogram. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at pages 7-9. Defendant argues that the specification consistently describes the coincidences unit as receiving inputs from multiple classifiers and evaluating them at the same time. *Id.* at 7-8. Defendant argues that the very purpose of the "coincidence unit" is to evaluate coincidences between the multiple classifiers in the system at the same time to construct the logical validation signal "out" described above. *Id.* at 8. Defendant argues that the word "coincidence" means "taking place at the same time. *Id.* Defendant argues that the claims support its construction because they recite plural classification signals compared to "criteria" (plural) in the coincidences unit. *Id.* Defendant argues that the coincidence unit's only function is to evaluate multiple

14

classification outputs to create a validation signal controlling whether a pixel should be added to the histogram. *Id.* at 9.

In its Reply, Plaintiff argues that Defendant's constructions add impermissible additional limitations to the claims. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 6. Plaintiff argues that Defendant's construction excludes multiple embodiments from the specification. *Id.* Plaintiff argues that coincidence does not require coincidence at the same time but instead refers to coincidence for each frame or pixel, and thus exact temporal equivalence is not required. *Id.*

(2) Analysis

The disputed terms "time coincidences unit" and "coincidence unit" (by themselves) appear in claims 3, 18, and 22 of the '293 patent. As detailed later in this opinion (see sections C and D below), however, because other terms are found to be indefinite in claims 3, 18, and 22, the Court declines to expressly construe the "time coincidences unit" and "coincidence unit" terms on their own, as such a construction is unnecessary in light of the indefinite findings for those claims. Nevertheless, disputes remain regarding the other "time coincidence" terms appearing in claims 1 and 29 of the '293 patent.

The parties' disputes as to these terms are generally the same and are grouped and argued by the parties together. In general, the parties dispute whether the term has a plain and ordinary meaning or whether a specific construction is necessary that restricts the "time coincidence" signals to satisfying stored conditions at the same time.

The disputed terms fall within claims 1 and 29 of the '293 patent, reproduced below in relevant part:

[claim 1, excerpt] … the histogram calculation units being configured to form a histogram representative of the parameter as a function of a validation signal and to determine by classification a binary classification signal resulting from a comparison of the parameter and a selection criterion C, wherein the classification signal is sent to the time coincidences bus, and **wherein the validation signal is produced from time coincidences signals from the time coincidence bus so that the calculation of the histogram depends on the classification signals carried by the time coincidence bus.**

[claim 29]   A method of analyzing parameters associated with an event by an electronic device, comprising:

     a) receiving data representative of one or more parameters of the event being detected;

     b) calculating, for a given instant of time, a statistical distribution, defined as a histogram, of a selected parameter of the event being detected;

     c) classifying the data by comparing its value to classification criteria stored in a classification memory;

     d) enabling the calculating step when classified data satisfies predetermined time coincidence criteria; and

     e) automatically updating, for each instant of time, the classification criteria stored in the classification memory based on statistical information associated with the histogram.

(emphasis added.)

Based on the claim language, the Court is not convinced that Defendant's constructions are necessary or appropriate. Regarding claim 29, nothing in the claim requires "predetermined time coincidence criteria" to mean "two or more stored conditions at the same time," as proposed by Defendant. Regarding claim 1, Defendant's construction is effectively a rewrite of the claim language and substitutes the phrase "from time coincidences signals from the time coincidence bus so that the calculation of the histogram depends on the classification signals carried by the time

16

coincidence bus" with "two or more classification signals satisfy stored conditions at the same time."

The '293 patent specification discusses the "time coincidences unit":

> Time coincidences unit 102 is connected to the bus 111, and includes at least one register 102 r and receives, for each pixel, the output values (inE, . . . , inB, inA) of the classifiers 101 of the various histogram calculation units 1 connected to the bus 111.

> This time coincidences unit 102 compares the values thus received to those contained in its register 102 r and transmits, on its output 102 s, for each pixel, an enabling signal equal to 1 when there is a coincidence between the register values equal to 1 and the corresponding data received from the bus 111, and a zero value in the reverse case, which corresponds to the following Boolean function:

> out=({overscore (in0)}+Rego).({overscore (in1)}+Reg1) . . . ({overscore (inn)}+Regn)(ino+inl+ . . . inn)

('293 patent, col. 9, ll. 37-50.) One of the embodiments in the specification teaches that the "time coincidences block 102 comprises a single register contain[ing] a single time coincidences value making up the time coincidences criterion R." (*Id.* at col. 16, ll. 55-58.) Thus, the specification appears to reject the limitation of "two or more stored conditions" as proposed by Defendant. To the extent Defendant's construction is based on an embodiment of the specification, the Federal Circuit has consistently held that "particular embodiments appearing in the written description will not be used to limit claim language that has broader effect." *Innova/Pure Water*, 381 F.3d at 1117.

On balance, the Court rejects Defendant's arguments. The Court is not convinced that Defendant's constructions are necessary or appropriate based on the intrinsic record. The Court finds that the terms have no meaning other than their plain and ordinary meaning and that the surrounding claim language provides sufficient meaning to the words in the claim terms. Because this resolves the dispute between the parties, the Court finds that the terms require no further construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997)

("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

The Court hereby construes "wherein the validation signal is produced from time coincidences signals from the time coincidence bus so that the calculation of the histogram depends on the classification signals carried by the time coincidence bus" of claim 1 of the '293 patent to have its **plain and ordinary meaning**.

The Court hereby construes "enabling the calculating step when classified data satisfies predetermined time coincidence criteria" of claim 29 of the '293 patent to have its **plain and ordinary meaning.**

C. Claim 3 of the '293 patent

Various terms are disputed within claim 3 of the '293 patent. The disputed terms include the following:

- "learning multiplexer"
- "values typical of a sequence of each of these registers"
- "the data DAT(A), DATA(B), …, DATA(E)"
- "the parameter DATA(A)" / "parameters other than DATA(A)"
- "the single time coincidences bus"

- "all the individual time coincidences signals"

- "wherein a counter of each address in the memory corresponds to the value d of a_{ijT} at a given instant"

- "wherein the test unit is provided for calculating and storing statistical data processes, after receiving the data aijT corresponding to the space at an instant T, a content of the analysis memory in order to update the output memory of the analysis output unit"

For most of these disputed terms, the Defendant argues that they are indefinite. In response Plaintiff effectively argues for a plain and ordinary meaning. Since the Court finds that at least two of the disputed terms are indefinite, the Court does not construe the remainder of these terms, as the construction of additional terms is not necessary in light of the overall indefinite finding for claim 3 of the '293 patent. Accordingly, the below analysis only focuses on the following two terms of claim 2 of the '293 patent: "values typical of a sequence of each of these registers" and "wherein the test unit is provided for…" As discussed below, the Court finds that both of these terms are indefinite; thus, the Court finds claim 3 of the '293 patent to be indefinite.

Claim 3 of the '293 patent is produced in its entirety, with the two disputed terms discussed herein emphasized:

> 3. A visual perception processor, comprising:
>
> data bus;
>
> a time coincidences bus; and
>
> two or more histogram calculation units that receive the data DATA(A), DATA(B), . . . DATA(E) via the data bus and supply classification information to the single time coincidences bus,

wherein at least one of said two or more histogram calculation unit processes data aijT associated with pixels forming together a multidimensional space (i, j) evolving over time and represented at a succession of instants (T), wherein said data reaches said at least one calculation unit in the form of a digital signal DATA(A) in the form of a succession aijT of binary numbers of n bits associated with synchronization signals enabling to define the given instant (T) of the multidimensional space and the position (i, j) of the pixels in this space, to which the signal aijT received at a given instant (T) is associated, said unit comprising:

an analysis memory including a memory with addresses, each address associated with possible values of the numbers of n bits of the signal DATA(A) and whose writing process is controlled by a WRITE signal;

a classifier unit comprising a memory intended for receiving a selection criterion C of the parameter DATA(A), said classifier unit receiving the signal DATA(A) at the input and outputting a binary output signal having a value that depends on a result of the comparison of the signal DATA(A) with the selection criterion C;

a time coincidences unit that receives the output signal from the classifier unit and, from outside the histogram calculation unit, individual binary enabling signals affecting parameters other than DATA(A), wherein said time coincidences unit outputs a positive global enabling signal when all the individual time coincidences signals are positive;

a test unit;

an analysis output unit including output memory;

an address multiplexer;

an incrementation enabling unit; and

a learning multiplexer;

wherein a counter of each address in the memory corresponds to the value d of aijT at a given instant, which is incremented by one unit when the time coincidences unit outputs a positive global enabling signal;

wherein the test unit is provided for calculating and storing statistical data processes, after receiving the data aijT corresponding to the space at an instant T, a content of the analysis memory in order to update the output memory of the analysis output unit, wherein the output memory is deleted before a beginning of each frame for a space at an instant T by an initialization signal;

wherein the learning multiplexer is configured to receive an external command signal and initiate an operation according to a learning mode in which registers of the classifier unit and of the time coincidences unit are deleted when starting to process a frame, **wherein the analysis output unit supplies values typical of a sequence of each of these registers.**

(emphasis added.)

1.   "values typical of a sequence of each of these registers"

Plaintiff argues that the disputed term "values typical of a sequence of each of these registers" has its plain and ordinary meaning and Defendant argues that the term is indefinite.

(1) The Parties' Positions

Plaintiff argues that the term has its plain meaning and does not need construction. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 13. Plaintiff argues that based on surrounding claim language the disputed claim term is referring to values typical of the "classifier unit" and the "time coincidences unit" registers. *Id.* at 13. Plaintiff argues that the term must refer to representative values derived from the analysis output unit, and that would be commonly used by one of the two registers referred to. *Id.* One of skill in the art would understand "typical" to mean representative or commonly used in the context of claim 3, and the Plaintiff relies on a dictionary definition and its expert for support. *Id.*

Defendant argues that neither the claim nor the specification provides any guidance for determining what is a "typical" value for any register or what is meant by a "sequence of each of these registers." *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 16. Defendant argues that "typical" is a term of degree, and without guidance, it is impossible for one of ordinary skill to determine what values of these registers would be typical, as opposed to atypical, and therefore, to determine the scope of this claim. *Id.* Defendant relies on its expert for support of its indefinite position. *Id.*

21

In its Reply, Plaintiff argues that this limitation is not indefinite because a person of skill in the art would understand it to refer to representative values derived from the analysis output unit and being supplied to the classifier unit and coincidences unit registers. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 2. Plaintiff argues that Defendant's argument that the claim provides no guidance as to what is "typical" ignores the earlier claim language reciting that the analysis output unit stores "statistical data processes" based on the "data aijT." *Id.* These statistical data processes, *e.g.*, RMAX, are "typical" or representative of a sequence of each of the registers. *Id.*

(2) Analysis

The Court agrees with the Defendant that this term is indefinite.

The relevant portions of claim 3 of the '293 patent are reproduced below:

> an **analysis output unit** including output memory;
>
> ….
>
> wherein the learning multiplexer is configured to receive an external command signal and initiate an operation according to a learning mode in which **registers of the classifier unit** and of the time coincidences unit are deleted when starting to process a frame, **wherein the analysis output unit supplies values typical of a sequence of each of these registers**.

(emphasis added.) The "analysis output unit" supplies values "typical of a sequence of each of these registers" of the classifier unit.

The Defendant argues that the phrase "typical of a sequence of each of these registers" is unclear and is indefinite. In particular, Defendant argues that there is no guidance in the specification or the claims for determining what is a "typical" value for any register or what is meant by a "sequence of each of these registers." In response, Plaintiff argues that the disputed

phrase simply has its plain and ordinary meaning. Neither of the parties has provided any meaningful citation to the specification as to what is meant by this phrase.

The Court is not persuaded by the Plaintiff's arguments. While the dictionary definition of "typical" may be "representative" or "commonly used," such a construction for this term – by itself – is not helpful and provides no further clarity to the term or the dispute between the parties.

Additionally, the Court finds that the claim language is unclear as to what is meant by "typical" as well as "a sequence of each of these registers." What values are typical? What values are atypical? The specification fails to provide guidance or meaning to this term. The claims do not help, nor do the Plaintiff's arguments or construction provide any guidance. In particular, Plaintiff's "plain meaning" construction does not help and provides no further clarity to the term or the dispute between the parties. Plaintiff merely states that one of skill in the art would not be confused by the disputed claim term and refers back to the claim language as a whole. Further, the Plaintiff's expert fails to provide any reasonable construction for this term, and fails to provide any reasonable scope of the claimed invention.

Accordingly, the Court finds that this term is indefinite and rejects Plaintiff's arguments to the contrary. Specifically, the Court finds that one of skill in the art would not understand with "reasonable certainty" the scope of the invention and the bounds of the claim based upon at least this disputed term. The Court finds that one of ordinary skill cannot reasonably determine the scope of this claim. Therefore, pursuant to the Supreme Court's holding in *Nautilus*, the Court agrees with Defendant's arguments that the claim when "read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention."

The Court hereby finds the term "values typical of a sequence of each of these registers" of claim 3 of the '293 patent to be **indefinite**.

> 2. "wherein the test unit is provided for calculating and storing statistical data processes, after receiving the data aijT corresponding to the space at an instant T, a content of the analysis memory in order to update the output memory of the analysis output unit"

Plaintiff argues that the disputed term "wherein the test unit is provided for calculating and storing statistical data processes, after receiving the data aijT corresponding to the space at an instant T, a content of the analysis memory in order to update the output memory of the analysis output" has its plain and ordinary meaning and Defendant argues that the term is indefinite.

(1) The Parties' Positions

Plaintiff argues that the term has its plain meaning and does not need construction. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 12. Plaintiff argues that as the claim language states, the "test unit" calculates "statistical data" after receiving "data aijT" from "the content of the analysis memory," it then stores this statistical data in the "output memory" of the "analysis output unit." *Id.* at 12. Figure 3 exemplifies the claimed structure. *Id.* Plaintiff relies on its expert stating that a person of skill in the art would understand this claim language with reasonable certainty based on the language of claim 3 as a whole. *Id.*

Defendant argues that the phrase "a content of the analysis memory in order to update the output memory of the analysis output unit" cannot be interpreted. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 18-19. Defendant argues that this phrase is not grammatically correct in the context of this limitation and appears to be, at least, missing a verb, rendering it meaningless and rendering claim 3 indefinite. *Id.* Defendant also

argues that at best Figures 3 and 4 of the specification show that data addresses the analysis

memory but does not store the analysis memory, which is in contrast to Plaintiff's apparent position

that the test unit receives the data. *Id.* Defendant relies on its expert for support of its indefinite

position. *Id.*

In its Reply, Plaintiff argues that this limitation is not indefinite because a person of skill

in the art would understand that the "test unit" calculates "statistical data" after receiving "data

aijT from "the content of the analysis memory" in order to update the "analysis output unit."

See, e.g., Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 2. Plaintiff argues that

whether the memory stores the literal aijT value or increments a memory address corresponding

to the value of aijT is irrelevant to a POSA's understanding of the claim. *Id.*

(2) Analysis

The Court agrees with the Defendant that this term is indefinite.

The relevant portion of claim 3 of the '293 patent is reproduced below:

> a test unit;
>
> …
>
> **wherein the test unit is provided for calculating and storing statistical
> data processes, after receiving the data aijT corresponding to the space
> at an instant T, a content of the analysis memory in order to update the
> output memory of the analysis output unit, wherein the output memory
> is deleted before a beginning of each frame for a space at an instant T
> by an initialization signal;**

(emphasis added.) On its face, the Court agrees with the Defendant that there are grammar issues

for this disputed phrase and it is unclear what portions of the disputed term are modifying other

portions of the phrase. In response, Plaintiff argues that the disputed phrase simply has its plain and ordinary meaning.

The Court is not persuaded by Plaintiff's arguments. Rather than interpret any portion of the disputed claim term, the Plaintiff effectively recites the claim language in its "clear" understanding of the meaning of the claim term, ignores any apparent grammar issues, and then dismisses as "irrelevant" whether the memory stores the a_{ijT} value or increments a memory address corresponding to that value. *See, e.g.*, Dkt. No. 148 at 2.

The Court finds that various portions of the disputed claim term are unclear. The phrase appears to be, at the least, missing a verb, and Plaintiff's plain meaning construction does not help because it provides no further clarity to the term or the dispute between the parties. Rather than providing a construction for the term, Plaintiff merely states that one of skill in the art would not be confused by the disputed claim term and references the claim language as a whole and the apparent intent of the claim language. Further, the Plaintiff's expert fails to provide any reasonable construction for this term, and fails to provide any reasonable scope of the claimed invention.

Therefore, the Court finds that this term is indefinite and rejects Plaintiff's arguments to the contrary. The Court finds that one of skill in the art would not understand with "reasonable certainty" the scope of the invention and the bounds of the claim based upon at least this disputed term. Further, the Court finds that one of ordinary skill cannot reasonably determine the scope of this claim. Accordingly, pursuant to the Supreme Court's holding in *Nautilus*, the Court agrees with Defendant's arguments that the claim when "read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention."

The Court hereby finds the term "wherein the test unit is provided for calculating and storing statistical data processes, after receiving the data a_{ijT} corresponding to the space at an instant T, a content of the analysis memory in order to update the output memory of the analysis output" of claim 3 of the '293 patent to be **indefinite**.

D. "configured to determine the data in the histogram that satisfy a selected criterion"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"configured to determine the data to be included in the histogram based on satisfying a selected criterion"	Indefinite Alternatively, plain meaning

The disputed term "configured to determine the data in the histogram that satisfy a selected criterion" appears in claims 18 and 22 of the '293 patent.

(1) The Parties' Positions

Plaintiff argues that claims 18 and 22, taken as a whole, make clear that the above phrase recites the function of classification for determining the content of the histogram. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 14. Plaintiff argues that the surrounding claim language recites an "input portal" which is coupled to the "classification unit" which outputs to the "coincidence unit" which generates an enable signal for the "histogram unit" which generates the histogram. *Id.* Thus, Plaintiff argues, the order of operations is clear. *Id.* Plaintiff also argues that in the context of the claim as a whole, this term must refer to determining the parameter data from the input portal to be included in the histogram based on a selected criterion.

Defendant argues that according to the claim language, data is added to the histogram based on the classification's unit output, but that the claim requires the output to be based on data *already in* the histogram. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 14. Defendant argues that this claim language is nonsensical because the classification unit cannot evaluate data "in the histogram" given that another limitation requires that the result of this calculation is used to create the histogram in the first place. *Id.* Defendant argues that the term is indefinite and Plaintiff's "fix" is to rewrite the claims. *Id.* Defendant argues that the claims may not be redrafted to cure drafting errors. *Id.* If the term is not indefinite, Defendant argues that the term simply should be given its plain meaning and not be rewritten. *Id.* at 14-15.

In its Reply, Plaintiff argues that this limitation is not indefinite because a person of skill in the art would understand that it describes the function of a classification unit—determining which data to be included in histogram calculation—consistent with the surrounding claim language and all embodiments of classification units in the specification. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 3.

(2) Analysis

The parties dispute whether the claim should be rewritten to insert the phrase "to be included" in the disputed term to otherwise avoid a nonsensical result. Both parties seem to agree that the claim as written is nonsensical. Thus, Defendant argues that the claim is either indefinite or has its plain meaning (which would in effect be a nonsensical claim). Plaintiff argues that the language "to be included" is not a rewrite because one of skill in the art reading the claim would necessarily understand the term "in" to mean "to be included in."

The disputed term is located within claims 18 and 22 of the '293 patent. Claim 18 is reproduced below in relevant part

a classification unit coupled to the input portal and the histogram unit, and **configured to determine the data in the histogram that satisfy a selected criterion,** and to generate an output accordingly, the classification unit supplying the output to the transfer bus;

(emphasis added.) Similar claim language appears in claim 22. In the limitations recited in the claim, the "histogram unit" calculates a histogram for the selected parameter, the "classification unit" determines the data in the histogram that satisfy a selected criterion, and the "coincidence unit" receives output from the classification unit and generates an enable signal for the histogram unit. In other words, in one portion of the claim, data is added to the histogram based on the classification unit's output, but in another portion of the claim the output from the classification unit is based on data already in the histogram.

Based on the claim language as written, both parties recognize that there is a problem with the claim language. The parties differ on what, if anything, the Court can do to fix the problem. Plaintiff suggests to rewrite the disputed claim term to make it allegedly consistent with an embodiment in the specification.

The Court agrees with the Defendant that the claim language is nonsensical because the classification unit cannot evaluate data "in the histogram" given that another limitation requires that the result of this calculation is used to create the histogram in the first place. The Court rejects Plaintiff's argument that the phrase "to be included" is not a re-write of the claim, or that the meaning of the term is clear based on the "claim as a whole." The Court finds that the claim language is unclear as to what is meant by "the data in the histogram." Does the classifier unit determine the data in the histogram as expressly required in the claims? Or does the classifier unit determine the data "to be included" in the histogram? Does the admitted "problem" with the claim reside within the disputed term, or does it reside in a separate portion of the claim?

The Federal Circuit "has repeatedly held that courts may not redraft claims to cure a drafting error made by the patentee, whether to make them operable or to sustain their validity." *Lucent Technologies, Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1215 (Fed. Cir. 2008). A finding by this Court to add the phrase "to be included" in the claim substantively changes the meaning of the claim; indeed, Plaintiff asks for such a substantive change only to make the claim make sense. Such a change is effectively a claim rewrite and is not a simple typographical correction or an interpretation of the claim as a whole. In effect, Plaintiff admits that the claims as written are nonsensical and thus indefinite. The Court declines Plaintiff's request to insert the "to be included" language in the claim to avoid an indefinite finding.

Therefore, the Court finds that one of skill in the art would not understand with "reasonable certainty" the scope of the invention and the bounds of the claims based upon this disputed term. Indeed, even the Plaintiff effectively admits that the claims as written are nonsensical. Accordingly, pursuant to the Supreme Court's holding in *Nautilus*, the Court agrees with Defendant's arguments that the claims when "read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." The Court rejects Plaintiff's arguments to the contrary.

The Court hereby finds the term "configured to determine the data in the histogram that satisfy a selected criterion" of claims 18 and 22 of the '293 patent to be **indefinite**.

E. "automatic" classification terms

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"wherein classification is performed automatically by processing statistical information associated with the calculated histogram" ('293 patent, claim 18)	"wherein classification for the histogram being calculated is performed using criteria that are updated, as the histogram is being calculated, using data characterizing the distribution of parameter values contained in the histogram"	"wherein classification is performed using criteria that are updated without human intervention after the histogram has been calculated using data characterizing the distribution of parameter values contained in the calculated histogram"
"automatically updating, for each instant of time, the classification criteria stored in the classification memory based on statistical information associated with the histogram" ('293 patent, claim 29)	Plain and ordinary meaning Each instant of time refers to each given instant of time	"for each given instant of time, updating classification criteria stored in memory without human intervention using data characterizing the distribution of parameter values contained in the histogram calculated for that instant of time"

The disputed term "wherein classification is performed automatically by processing statistical information associated with the calculated histogram" appears in claim 18 of the '293 patent. Because another disputed term of claim 18 ("configured to determine …," discussed in section D above) is found to be indefinite, the Court declines to construe this separate term in claim 18 as such a construction is not necessary.

The disputed term "automatically updating, for each instant of time, the classification criteria stored in the classification memory based on statistical information associated with the histogram" appears in claim 29 of the '293 patent. This term is analyzed and construed as detailed below.

(1) The Parties' Positions

Plaintiff argues that the phrases are easily understood to refer to updating the criteria used

for classification as the histogram is being calculated. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening

Claim Construction Brief, at pages 15-17. Plaintiff argues that its construction clarifies that these

updates are performed as the histogram is being calculated so that the classification criteria may

change as the histogram is formed, which may be referred to loosely as "real-time" updating of

the classification criteria. *Id.* Plaintiff argues that its construction is consistent with the

specification, which describes that statistical information is calculated and stored in memory in

parallel with the formation of the histogram. *Id.* at 16-17. Plaintiff argues that the phrase "without

human intervention," as proposed by Defendant, is not found in the specification or claims and

adds no further clarity to the disputed term. *Id.* at 17. Regarding claim 29, Plaintiff argues that

the limitation "for each instant of time" refers to the antecedent "given instant of time" of step (b)

of claim 29. *Id.* at 18. Plaintiff argues that the classification criteria are updated as the histogram

is being calculated using data characterizing the distribution of parameter values contained in the

histogram. *Id.* at 18. In other words, Plaintiff argues that the classification criteria are updated as

the histogram is calculated. *Id.* Plaintiff argues that a "given instant of time" refers to a frame of

pixels for a particular time. *Id.*

Defendant argues that the parties' primary dispute is whether the criteria are updated after

a histogram has been calculated or "as the histogram is being calculated." *See, e.g.*, Dkt. No. 138,

Defendant's Responsive Claim Construction Brief, at page 10. Defendant argues that Plaintiff's

construction seeks to broaden the claims' scope beyond what the claim language and the

specification support to include updating classification criteria in the middle of calculating a

histogram. *Id.* Regarding claim 29, Defendant argues that a histogram is calculated for each

frame, and classification criteria are updated for each frame, i.e., once per histogram. *Id.* at 11.

Defendant argues that classification criteria are not updated while the histogram is being calculated but, rather, after the histogram calculation is complete such that the new classification criteria can be used to process the next frame. *Id.* Defendant argues that the specification shows that real time updating of the classifier happens after the histogram and the statistical data have been calculated. *Id.* at 12. Defendant also argues for a construction of automatically to distinguish it from a user manually setting a register. *Id.*

In its Reply, Plaintiff argues that the dispute is whether the classification criteria updates while processing a single frame or only for a subsequent frame. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 7. Regarding claim 29, Plaintiff argues that Defendant's construction is wrong because "updating only once per frame" cannot be correct because it is contrary to claim step (b), which can occur several times per frame despite being "for a given instant of time." *Id*. at 7. Plaintiff argues that step (b) is performed each time step (d) enables the calculating step to build the histogram up. *Id.*

(2) Analysis

For the "automatically updating" term in claim 29 of the '293 patent, the parties agree that each instant of time refers to each given instant of time. A primary dispute is whether the criteria are updated *after* a histogram has been calculated (Defendant) or *as* the histogram is being calculated (Plaintiff).

Claim 29 of the '293 patent is reproduced below:

A method of analyzing parameters associated with an event by an electronic device, comprising:

a) receiving data representative of one or more parameters of the event being detected;

33

b) calculating, **for a given instant of time**, a statistical distribution, defined as a histogram, of a selected parameter of the event being detected;

c) classifying the data by comparing its value to classification criteria stored in a classification memory;

d) enabling the calculating step when classified data satisfies predetermined time coincidence criteria; and

e) automatically updating, for each instant of time, the classification criteria stored in the classification memory based on statistical information associated with the histogram.

(emphasis added.)

The specification describes that the statistical information for a histogram of a specific frame and parameter is calculated in parallel with the formation of the histogram. *See, e.g.*, '293 patent, col. 9, l. 51 – col. 10, l. 14. The specification also discloses that the memory of the classifier is updated automatically in real-time and the classification is performed using the statistical information of the histogram. *See, e.g.*, '293 patent, col. 11, ll. 14-52, col. 12, ll. 16-42. The Court generally agrees with Plaintiff's arguments that the specification discusses real-time updating.

On balance, the Court rejects Defendant's arguments. The Court is not convinced that Defendant's constructions are necessary or appropriate based on the intrinsic record. To the extent Defendant's construction is based around an embodiment of the specification, the Federal Circuit has consistently held that "particular embodiments appearing in the written description will not be used to limit claim language that has broader effect." *Innova/Pure Water*, 381 F.3d at 1117. Further, the Court finds that Defendant's construction is essentially a rewrite of the disputed claim language.

The Court finds that the terms have no meaning other than their plain and ordinary meaning and that the surrounding claim language provides sufficient meaning to the words in the claim terms. The Court declines to adopt Defendant's construction for the term "automatically" as

meaning "without human intervention," as that phrase is unduly restrictive and potentially ambiguous – at some point human intervention must be required. A plain and ordinary construction for the term "automatic" is appropriate and sufficient. Since this resolves the dispute between the parties, the Court finds that the terms require no further construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

However, because the parties are in agreement that "each instant of time" refers to "each given instant of time," and the Court agrees with such a finding, the Court finds that such a limitation should be included in the Court's construction.

The Court hereby construes "automatically updating, for each instant of time, the classification criteria stored in the classification memory based on statistical information associated with the histogram" of claim 29 of the '293 patent to mean "**automatically updating, for each given instant of time, the classification criteria stored in the classification memory based on statistical information associated with the histogram.**"

F. "domain" and "class"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"domain" ('001 patent, claims 1, 8; '015 patent, claim 6; '134 patent, claim 1)	"the complete set of values for a parameter"	"the complete set of values for a property of a pixel"
"class" ('001 patent, claims 1, 8; '015 patent, claim 6; '134 patent, claim 1)	"a selected subset of values of a parameter"	"a range of values in a domain"

The disputed terms "domain" and "class" appear in at least claims 1 and 8 of the '001 patent, claim 6 of the '015 patent, and claim 1 of the '134 patent.

(1) The Parties' Positions

Regarding the term "domain," Plaintiff argues that the specification provides examples of domains in relation to a "parameter" that are not limited to being a "property of a pixel" as proposed by the Defendant. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 19. In particular, Plaintiff argues that "speed" and "oriented direction" are not "properties of a pixel" but rather are examples of a domain. *Id.* These other domains are not properties of a pixel per se but are based on surrounding pixels and data from previous frames. *Id.* Regarding the term "class," Plaintiff argues that the specification describes classes as being selected from within domains, and thus classes are subsets of domains. *Id.* at 20. The specification does not teach that classes are necessarily a "range of values," as Defendant proposes. *Id.*

Defendant argues that a "domain" defines a particular pixel property. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 19. Defendant argues that the specification describes the domains for each pixel, including for speed and direction, which

contradicts Plaintiff's arguments that the domains are not properties of a pixel. *Id.* Regarding

classes, Defendant argues that the specification describes a domain as being divided into classes,

with each class representing a defined range of values within a domain. *Id.* at 20. Defendant

argues that Plaintiff's use of the term "parameter" is not based on the claims and introduces

ambiguities to the claim language. *Id.* Defendant argues that Plaintiff's use of the term "selected"

would apply to disconnected subsets and confuses the term "classifier unit" with a "class," which

is simply ranges of values in the domain and not selected subsets. *Id.*

In its Reply, Plaintiff argues that the specification uses the term "parameter" consistent

with the concept of a "domain." *See, e.g.,* Dkt. No. 148, Plaintiff's Reply Claim Construction

Brief, at page 8. Plaintiff argues that Defendant's construction excludes properties associated with

pixels that are described as domains in the specification, such as speed and direction, but these

domains are calculated based on matrices of pixels and not a single pixel. *Id.* Regarding "class,"

Plaintiff argues the term "subset" can apply to discontinuous values (such as 3 and 5) and the term

"range" would require a successive plurality of values (such as 3, 4, and 5); however, the claim

refers to classes within domains and therefore a class cannot constitute the whole domain. *Id.*

Plaintiff argues that Defendant's construction impermissibly limits the claims to a single

embodiment and excludes other disclosed class embodiments. *Id.*

(2) Analysis

While the parties agree that the "domain" term is the "complete set of values for"

[something], the parties disagree as to what is that "something." The parties' primary dispute as

to the "class" term is whether it is simply a "selected subset" of the domain or is a "range of values"

of the domain.

As a representative example, claim 1 of the '134 patent is recited below in its entirety:

A process of tracking a target in an input signal implemented using a system comprising an image processing system, the input signal comprising a succession of frames, each frame comprising a succession of pixels, the target comprising pixels in **one or more of a plurality of classes in one or more of a plurality of domains,** the process performed by said system comprising, on a frame-by-frame basis:

forming at least one histogram of the pixels in **the one or more of a plurality of classes in the one or more of a plurality of domains**, said at least one histogram referring to **classes** defining said target; and

identifying the target in said at least one histogram itself,

wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target.

(emphasis added). Other claims that contain the disputed terms are similar. The claim language is clear that the one or more plurality of domains is formed of and/or made of one or more of a plurality of classes. In other words, the classes are expressly claimed as being part of the domains. The term "parameter" is not used in the claims, nor is the term "range."

The Abstract of the '015 patent[1] states that the domains may include "luminance, hue, saturation, speed (V), oriented direction (D1), time constant (CO), first axis (x(m)), and second axis (y(m))." The '015 patent specification has numerous other instances where it provides similar and exemplary domains. *See, e.g.*, '015 patent, col. 3, ll. 54-57; col. 5, ll. 34-38. The '015 patent states that the "[s]patial processing unit 17 generates the following output signals for each pixel: i) a signal V representing the displacement speed for the pixel . . . ii) a signal representing the direction of displacement of the pixel . . ." *Id.* at col. 15, ll. 27-30. Thus, for each pixel the unit may generate a speed signal and a direction signal. *Id.* However, the specification does not expressly state that the generated signals or classes are "properties of a pixel."

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[1] In general, because each of the patents in the '015 patent family share the same substantive patent specification, the Court will only reference the '015 patent specification for convenience purposes when dealing with any disputed terms related to the '015 patent family.

In one example, the specification states that the system may "select for processing only data points in any selected classes within any selected domains." '015 patent, col. 19, ll. 8-10. For example, the system may be used to detect data points having speed, direction, and luminance. *Id.* at col. 19, ll. 10-12. Figure 14a shows an example of the successive classes C1, C2, …Cn, each representing a particular velocity for a hypothetical velocity histogram. *Id.* at col. 20, ll. 47-50. Thus, Figure 14a shows an example of classes in a velocity domain. *Id.*

Regarding the term "domain," the Court rejects Plaintiff's inclusion of the word "parameter." While the "parameter" term has an agreed upon meaning for the '293 patent, the parties have not agreed to that term for the other patents. During the claim construction hearing, Plaintiff's counsel suggested that it would offer a meaning for this term during trial. The Court finds that the inclusion of this "parameter" term, which is not found in the claims, is not supported for the domain term and it is unclear what the "parameter" term means in this context. The Court rejects Plaintiff's arguments to the contrary. However, the Court rejects Defendant's construction because it is not clear that the domains must be properties of a pixel per se and not merely associated with the properties of a pixel. For example, "speed" and "oriented direction" are provided as exemplary domains in the specification, but the Court is not convinced that they are properties of a pixel by itself or in isolation as opposed to being related to a surrounding group of pixels or data from previous frames. Thus, the Court finds Defendant's construction as potentially being too narrow. Consistent with the specification, the Court finds that the term "domain" is associated with the properties of a pixel, which would include all of the exemplary domains listed in the specification. In its briefing, Plaintiff appears to agree with the construction of "properties associated with pixels." *See, e.g.*, Dkt. No. 148, Reply Brief at page 8. The Court finds that the most appropriate construction of the "domain" term is that it is properties associated with a pixel

and not necessarily properties of the pixel per se. The Court rejects Defendant's arguments to the contrary.

Regarding the term "class," both parties seem to agree that such term constitutes part of the values of the domain, but differ as to what part of the domain it is referring. Indeed, while Plaintiff admits that "classes are subsets of domains" (*see, e.g.*, Plaintiff's Opening Brief at page 20), Plaintiff's construction changes the word "domain" to "parameter." For the some reasons as stated above, the Court rejects Plaintiff's unwarranted inclusion of the term "parameter" for the term class. However, the Court rejects Defendant's inclusion of the word "range." The Court is not convinced that the "range" limitation is appropriate or necessary. To the extent there is any support in the specification for Defendant's construction, the Court finds that any such support is merely an embodiment in the specification that should not be used to limit the claim language that has broader affect. *See, e.g.*, *Innova/Pure Water,* 381 F.3d at 1117. Instead, as apparently agreed upon by the parties, a "class" is simply a "subset" of a "domain," as supported by the claims and the specification.

The Court hereby construes "domain" to mean "**the complete set of values for a property associated with a pixel**."

The Court hereby construes "class" to mean "**a subset of values in a domain**."

G. "forming at least one histogram…"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"forming at least one histogram of the pixels in two or more classes that are in two or more domains"	"forming at least one 'histogram' of the pixels in at least one 'class' selected from multiple 'classes' in at least one of multiple 'domains'"

The disputed term "forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains" appears in at least claims 1 and 8 of the '001 patent, claim 6 of the '015 patent, and claim 1 of the '134 patent.

(1) The Parties' Positions

Plaintiff argues that the meaning of this limitation is clear on its face because "one or more" of a "plurality" means there must be at least one "plurality," i.e., two, while not excluding the possibility of more than one, i.e., multiple, pluralities. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 21. Plaintiff argues that its construction is supported by the specification. *Id.* Plaintiff argues that the Defendant's construction of the phrase would render the "plurality" term to be superfluous. *Id.*

Defendant argues that the only dispute regarding this term is whether "one or more" means "at least one," as demanded by the plain language itself, or should be rewritten to mean "two or more." *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 21. Defendant argues that the specification can consider pixels in only one class or in multiple classes. *Id.* Defendant argues that there is no basis to rewrite the claims as attempted by Plaintiff. *Id.* Defendant argues that its construction does not read out "pluralities" but gives meaning to all terms. *Id.* at 21-22.

In its Reply, Plaintiff argues that its construction is the natural reading of the claim language. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at pages 8-9. Plaintiff argues that the specification teaches that two or more domains are required. *Id.*

(2) Analysis

The parties' primary dispute is whether the term "one or more" means "at least one" (proposed by Defendant) or "two or more" as proposed by Plaintiff.

As a representative example, claim 1 of the '134 patent is recited below in its entirety:

A process of tracking a target in an input signal implemented using a system comprising an image processing system, the input signal comprising a succession of frames, each frame comprising a succession of pixels, the target comprising pixels in one or more of a plurality of classes in one or more of a plurality of domains, the process performed by said system comprising, on a frame-by-frame basis:

forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains, said at least one histogram referring to classes defining said target; and

identifying the target in said at least one histogram itself,

wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target.

(emphasis added). Other claims that contain the disputed term are similar. The claim recites that

the target comprises "pixels in one or more of a plurality of classes in one or more of a plurality

of domains." The claim further requires forming at least one histogram of "the" pixels in "the"

one or more of a plurality of classes in "the" one or more of a plurality of domains. In other words,

it is clear that the recited "the one or more of a plurality of classes" of the disputed term is referring

to at least one class from a plurality of (or multiple) classes, and does not require "two or more

classes" as suggested by the Plaintiff. The same analysis applies for the "domains" term.

The specification supports forming a histogram of at least one class or two or more classes.

For example, the '015 patent states that "[f]or example, with respect to speed, which is preferably

a value in the range of 0-7, classifier 25b may be set to consider only data within a particular speed

category or categories, e.g., speed 1, speeds 3 or 5, speed 3-6, etc." *See, e.g.*, '015 patent, col. 18,

ll. 13-16. In other words, the classifier can consider pixels in just one class as well as in more than

one class. *See id.*

Overall, the Court agrees with the construction and arguments advanced by the Defendant. The Court reject's Plaintiff's argument that Defendant's construction would render the term "plurality" superfluous. The Court rejects Plaintiff's attempt to change the claim language from "one or more of the plurality of classes" to "at least two classes." The Court finds that Defendant's construction gives effect to all the words of the disputed claim term.

The Court hereby construes "forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains" to mean "**forming at least one histogram of the pixels in at least one class selected from multiple classes in at least one of multiple domains.**"

H. "said at least one histogram referring to classes defining said target"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"at least one histogram being formed of pixels in at least two classes that define said target"	"the at least one 'histogram' includes data values for pixels meeting classification criteria matching characteristics of the target"

The disputed term "said at least one histogram referring to classes defining said target" appears in at least claims 1 and 8 of the '001 patent, claim 6 of the '015 patent, and claim 1 of the '134 patent.

(1) The Parties' Positions

Plaintiff argues that the dispute is whether this phrase requires "two or more classes." *See, e.g.,* Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 22. Plaintiff argues that "classes" is a plural term and clearly requires at least two classes. *Id.* Defendant's construction would read out the requirement for multiple classes. *Id.*

Defendant argues that the specification never uses or explains the phrase "referring to classes" or "defining the target." *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 22. Defendant argues that the specification teaches that an object in an image may be tracked based upon its characteristics. *Id.* Defendant argues that Plaintiff's construction would exclude preferred embodiment and does not define the phrase "define the target." *Id.*

In its Reply, Plaintiff argues that the phrase "classes" requires Plaintiff's construction. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 9. Plaintiff also argues that its construction is supported by Figure 11 in the specification. *Id.*

(2) Analysis

The parties dispute the embedded phrases "referring to classes" and "defining said target" of the disputed term. As a representative example, claim 1 of the '134 patent is recited below in its entirety:

> A process of tracking a target in an input signal implemented using a system comprising an image processing system, the input signal comprising a succession of frames, each frame comprising a succession of pixels, the target comprising pixels in one or more of a plurality of classes in one or more of a plurality of domains, the process performed by said system comprising, on a frame-by-frame basis:
>
> forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains, **said at least one histogram referring to classes defining said target; and**
>
> identifying the target in said at least one histogram itself,
>
> wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target.

(emphasis added). Other claims that contain the disputed term are similar. The language of the claim recites that the target comprises "pixels in one or more of a plurality of classes in one or

more of a plurality of domains." The claim language further requires forming at least one histogram of "the" pixels in "the" one or more of a plurality of classes in "the" one or more of a plurality of domains. The disputed claim language then simply requires the at least one histogram to refer to the previously claimed classes. In other words, the "classes" recited in the disputed term are simply those "one or more classes" previously recited.

The parties focus largely on the claim language and little on the specification. Overall, the Court finds that the parties' citations and/or arguments relating to the specification are not particularly helpful.

The Court rejects Plaintiff's attempt to change the claim language from "one or more of the plurality of classes" to "at least two classes." While the "classes" term is recited is plural, that does not require "at least two" classes as suggested by the Plaintiff. Rather, it is merely a reference to the previously recited "plurality of classes," and it is clear that the claim language only requires the target and histogram to be formed of "one or more" of the plurality of classes, as required by the claim language and as determined by the Court from the prior disputed term "forming …" as detailed in section G above.

The Court also rejects Defendant's construction. The Court is not convinced that the phrase "referring to classes defining said target" requires "including data values for pixels meeting classification criteria matching characteristics of the target." Defendant's construction is not supported by the claim language, and the Court is not convinced that Defendant's construction is warranted, much less required by the specification or the claims.

Consistent with the Plaintiff's construction, the Court finds that the "referring" word simply means that the histogram is formed of pixels. The Court finds that the remaining phrase "defining said target" does not need a construction. This is a phrase that is easily understood by

the jury, and it does not appear to have any meaning other than its plain and ordinary meaning. Because this resolves the dispute between the parties, no additional construction is needed. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

The Court hereby construes "forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains" to mean "**at least one histogram being formed of pixels in the one or more classes that define said target**."

I. "identifying…" terms

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"identifying the target in said at least one histogram itself" ('001 patent, claims 1, 8; '134 patent, claim 1)	Plain and ordinary meaning	"identifying pixels in the 'histogram' meeting classification criteria of the target"
"identify[ing] [a/the] target from the [said at least one] histogram" ('445 patent, claims 1, 24; '015 patent, claim 6)	Plain and ordinary meaning	"identify[ing] pixels in the histogram meeting classification criteria of [a/the] target"

"identifying multiple targets associated with the multiple histograms" ('445 patent, claim 9)	Plain and ordinary meaning	"identifying pixels in the multiple histograms meeting classification criteria of multiple targets"

The disputed "identifying" terms appear in claims 1 and 8 of the '001 patent, claims 1, 9, and 24 of the '445 patent, and claim 6 of the '015 patent.

(1) The Parties' Positions

Plaintiff argues that the disputed phrases are easily understood based on the claim language. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 23. Plaintiff argues that Defendant's constructions includes limitations not found in the claims. *Id.* Plaintiff argues that the specification describes identifying objects and not pixels, and Defendant's construction is contrary to the specification. *Id.* Plaintiff also argues that Defendant ignores the prosecution history, in which patentee added the term "itself" in one of the claims during prosecution. *Id.* at 24.

Defendant argues that, consistent with the specification, a histogram is formed and those pixels in the histogram that comprise the target are identified. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 25. Defendant argues that the patentee's inclusion of the word "itself" during prosecution was only to clarify what was already recited in the claim language and not an additional limitation. *Id.* at 26.

In its Reply, Plaintiff argues that it disagrees with Defendant's constructions. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 9.

(2) Analysis

The parties dispute whether "identifying" needs clarification and what is the meaning of the term based on the specification.

As a representative example, claim 1 of the '134 patent is recited below in its entirety:

A process of tracking a target in an input signal implemented using a system comprising an image processing system, the input signal comprising a succession of frames, each frame comprising a succession of pixels, the target comprising pixels in one or more of a plurality of classes in one or more of a plurality of domains, the process performed by said system comprising, on a frame-by-frame basis:

forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains, said at least one histogram referring to classes defining said target; and

identifying the target in said at least one histogram itself,

wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target.

(emphasis added). Other claims that contain the disputed term are similar. The claim only refers to "identifying the target." The claim language does not require "identifying pixels in the histogram meeting classification criteria" as proposed by Defendant.

There are numerous references to the "identifying" term in the specification. In some instances, the specification describes identifying objects (*see, e.g.*, '015 patent, col. 16, ll. 44-47), while in some instances it describes identifying pixels (*see, e.g.*, '015 patent, col. 21, ll. 60-63). The Court is not convinced that the specification requires identifying pixels in the histogram that meet certain classification criteria. At best, Defendant's citation to the specification is a limitation to an embodiment of the specification. However, the Federal Circuit has consistently held that "particular embodiments appearing in the written description will not be used to limit claim language that has broader effect." *Innova/Pure Water,* 381 F.3d at 1117.

The Court finds that the "identifying" terms have no meaning other than their plain and ordinary meaning. The Court rejects Defendant's arguments to the contrary, which insert claim limitations for which there is not clear support. Since this resolves the dispute between the parties, the Court finds that the term requires no further construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

The Court hereby construes "identifying the target in said at least one histogram itself" of claims 1 and 8 of the '001 patent and claim 1 of the '134 patent to have its **plain and ordinary meaning.**

The Court hereby construes "identify[ing] [a/the] target from the [said at least one] histogram" of claims 1 and 24 of the '445 patent and claim 6 of the '015 patent to have its **plain and ordinary meaning**.

The Court hereby construes "identifying multiple targets associated with the multiple histograms" of claim 9 of the '445 patent to have its **plain and ordinary meaning**.

J. "generating …" terms

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"generat[e/ing] [a/the] histogram based on classification values of [a/the] plurality of pixels" ('445 patent, claims 1, 9, 14, 24)	"generating a histogram for two or more pixels that meet two or more selected classification criteria"	"generat[e/ing] a 'histogram' of two or more pixels that have specified 'classification values'"
"generating multiple histograms based on classification values of multiple pluralities of pixels" ('445 patent, claim 9)	"generating multiple histograms, each for two or more pixels that meet two or more selected classification criteria"	"generating multiple 'histograms,' each of two or more pixels that have specified 'classification values'"

The disputed "generating" terms appear in claims 1, 9, 14, and 24 of the '445 patent.

(1) The Parties' Positions

Plaintiff argues that the claim language requires that the recited pixels meet two or more selected classification criteria. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 26. Plaintiff argues that the specification repeatedly describes using two or more classification criteria in classifying pixels to generate histograms. *Id.*

Defendant argues that the parties agree to the term "classification values" and that the claim plainly requires that the histogram be created for pixels, where each pixel has at least one classification value, and two or more pixels have classification values (plural). *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 23-24. Defendant argues that the specification fully supports this construction, describing examples in which the classifier output is determined by only one selected criterion. *Id.* at 24. Defendant argues that Plaintiff improperly rewrites the claim in terms of classification criteria, which are inputs to the classifier to which the pixel data is compared, and then relies on the claimed "values" being plural to deduce that there

must be multiple classification criteria input to the classifier. *Id.* Defendant argues that nowhere

does the claim language require that each pixel "meet two or more selected classification criteria"

as Plaintiff's construction requires. *Id.*

(2) Analysis

The disputed term includes the underlying term "classification values." The parties have

agreed that "classification value" means "a value resulting from determining whether a pixel meets

a selected classification criterion for a domain." *See, e.g.*, Dkt. No. 150 (Joint Claim Construction

Chart.) The parties' primary dispute is whether the generating term is based on meeting specified

classification values (Defendant) or two or more selected classification criteria (Plaintiff).

The relevant claim language from the '445 patent is reproduced below:

> [claim 1] **generating a histogram based on classification values of a plurality of pixels** in a second frame of the input signal subsequent to the first frame
>
> [claim 9] generating the histogram based on classification values of the plurality of pixels in the first frame includes **generating multiple histograms based on classification values of multiple pluralities of pixels**

(emphasis added). The claim language itself references "classification values" and not

"classification criteria." The claim language does not require that each pixel meet two or more

selected classification criteria.

Defendant relies on portions of the specification where the classifier output is determined

by only one selected criterion. *See e.g.*, '445 patent, col. 18, ll. 24-27. Plaintiff relies on other

portions of the specification that require two or more selected classification criteria. *See, e.g.*, '445

patent, col. 19, ll. 14-21; col. 21, ll. 14-26.

On balance, the Court finds Defendant's proposed construction most consistent with the

intrinsic evidence. The Court is not convinced that "classification values" – which is an agreed

upon term – should be replaced by "two or more selected classification criteria" as proposed by Plaintiff. The Court finds that the plural "classification values" relates to the "plurality" of pixels, not that each pixel must have a plurality of classification values. Thus, consistent with the claim language, the claim plainly requires that the histogram be created for pixels, wherein each pixel has at least one classification value, and two or more pixels (*e.g.*, the plurality) have classification values. The Court rejects Plaintiff's arguments to the contrary. However, the Court is not convinced that the word "specified" in Defendant's construction is necessary or appropriate.

The Court hereby construes "generat[e/ing] [a/the] histogram based on classification values of [a/the] plurality of pixels" of claims 1, 9, 14, and 24 the '445 patent to mean "**generat[e/ing] a histogram of two or more pixels that have classification values.**"

The Court hereby construes "generating multiple histograms based on classification values of multiple pluralities of pixels" of claim 9 of the '445 patent to mean "**generating multiple histograms, each of two or more pixels that have classification values.**"

K. "displaying an outline associated with the target"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"displaying an outline that overlaps a boundary of the target"	Plain and ordinary meaning

The disputed term "displaying an outline associated with the target" appears in at least claims 4, 9, and 25 of the '445 patent.

(1) The Parties' Positions

Plaintiff argues that the claim language, in light of the specification, requires that the outline overlap with the boundary. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction

52

Brief, at page 26. Plaintiff argues that a person of skill in the art would understand the term "outline" to refer to targeting boxes." *Id.* at 26-27. Plaintiff argues that the outline must overlap the boundary of the target and not completely surround the target. *Id.* at 27.

Defendant argues that the term "outline" is not a special term of art and would be familiar to a lay juror as a contour that defines or bounds the target. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 28. The Defendant argues that the specification never describes an "outline," and even if the outline is similar to the disclosed "targeting box" that this targeting box is not constrained to overlap a boundary of the target. *Id.* Rather, the targeting box can be enlarged and reduced in size as appropriate to maintain a track of the target. *Id.* Defendant argues that Plaintiff's construction would exclude the only embodiment. *Id.*

In its Reply, Plaintiff argues that Defendant's citation to the specification is not helpful. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 9.

(2) Analysis

The parties' primary dispute revolves around the phrase "associated with." Defendant argues that it has its plain and ordinary meaning, while Plaintiff argues that the phrase means "that overlaps a boundary of."

The disputed term "displaying an outline associated with the target" appears in at least claims 4, 9, and 25 of the '445 patent. Claim 4 is recited below:

> The process of claim 1, further comprising **displaying an outline associated with the target** at a display location based on the target location.

(emphasis added.) The claim does not require the terms "overlap" or "boundary" as proposed by the Plaintiff. The plain meaning of "associated with" implies some type of connection or relation, and does not imply or require the narrow language "overlaps a boundary."

Regarding the specification, the term "outline" is never used in the specification of the '445 patent. Instead, the specification teaches of a "targeting box" that may be used for "bounding the target" or "surrounding the target." *See, e.g.*, '445 patent, col. 25, ll. 19-37. However, the specification also mentions that the box may be "larger than the target" and still be "bounded." *See, e.g., id.* at col. 24, ll. 47-62. The box may constantly be enlarged and reduced as appropriate to maintain a track of the target. *Id.* at col. 25, ll. 1-4. In one example, the specification mentions that the box may overlap the boundary of the target. *Id.* at col. 24, ll. 37-40.

The Court rejects Plaintiff's argument that the outline must overlap the boundary of the target and not completely surround the target. The claim language recites the word "associated with" and does not require overlapping the boundary. While the "associated with" language may include overlapping the boundary, the plain meaning of the term clearly is not limited to overlapping the boundary. Had the patentee wanted to use different words (which it did in the specification), it could have easily done so in the claims. At best, Plaintiff's reliance on the specification is a limitation to an embodiment of the specification. However, the Federal Circuit has consistently held that "particular embodiments appearing in the written description will not be used to limit claim language that has broader effect." *Innova/Pure Water,* 381 F.3d at 1117.

The Court finds that the term "associated with" has no meaning other than its plain and ordinary meaning. Similarly, the Court finds the phrase "displaying an outline associated with the target" to have no meaning other than its plain and ordinary meaning. The Court rejects Plaintiff's arguments to the contrary. Because this resolves the dispute between the parties, the Court finds that the term requires no further construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the

claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

The Court hereby construes "displaying an outline associated with the target" to have its **plain and ordinary meaning**.

L. "wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"wherein forming the at least one histogram further includes forming the histogram based on determined X minima and maxima and Y minima and maxima of boundaries of the target"	"wherein forming the at least one 'histogram' includes determining the minimum and maximum x and y coordinates of the target from 'histograms' of x and y coordinates of the target"

The disputed term "wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target" appears in claim 1 of the '134 patent.

(1) The Parties' Positions

Plaintiff argues that the dispute is whether the term is limited to a particular means of "forming" or not. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at pages 24-25. Plaintiff argues that the language of claim 1 does not limit how the X and Y extrema boundaries of the target are determined, and the specification describes methods of determining the X and Y extrema not based on x and y histograms. *Id.* Plaintiff argues that, based on the

specification, the boundaries may be manually set or that the x and y extrema of the target may not necessarily correspond to the extrema of the histograms of the target. *Id.*

Defendant argues that Plaintiff's construction rearranges the words of the claim to read the "determining" requirement out of the claim. *See, e.g.,* Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 26. Defendant argues that the patent describes only one way of determining the X and Y extent (i.e., location or position) of a target, and that is by enabling the formation of X and Y histograms. *Id.* at 27. Defendant argues that the patent does not describe or enable any other way to determine X minima and maxima, and that the claims cannot enlarge what is patented beyond what the inventor has described as the invention. *Id.*

In its Reply, Plaintiff argues that the claim does not require any particular way of determining the x and y boundaries of the target. *See, e.g.,* Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 9. Plaintiff argues that Defendant imports a limitation to the claims from an embodiment of the specification. *Id.*

(2) Analysis

The parties' primary dispute as to this term is whether the "forming" step requires a particular way of determining the x and y boundaries, such as from a histogram as proposed by Defendant.

Claim 1 of the '134 patent is recited below in its entirety:

A process of tracking a target in an input signal implemented using a system comprising an image processing system, the input signal comprising a succession of frames, each frame comprising a succession of pixels, the target comprising pixels in one or more of a plurality of classes in one or more of a plurality of domains, the process performed by said system comprising, on a frame-by-frame basis:

forming at least one histogram of the pixels in the one or more of a plurality of classes in the one or more of a plurality of domains, said at least one histogram referring to classes defining said target; and

identifying the target in said at least one histogram itself,

wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target.

(emphasis added).   The claim language refers to forming the "at least one histogram" by the "determining …" step. The determining step in the claim language does not require determining the x and y boundaries from a histogram, it only simply requires determining the x and y boundaries of the target.

Both parties rely on portions of the specification that supposedly support their arguments. In particular, the Defendant relies on portions of the specification that determine the X and Y extent of a target by enabling the formation of X and Y histograms. *See, e.g.*, '134 patent, col. 20, ll. 55-59; col. 21, ll. 53-60.   Defendant argues that there is no other described way on determining the extrema of the target, and thus the claim language must necessarily be limited to the specification.

On balance, the Court rejects Defendant's argument that the disputed term is limited to the portion of the specification relied upon by the Defendant. While the disputed term may include determining the extrema based on x and y histograms, the plain language of the claim does not necessarily limit the determining step as suggested by the Defendant. The Federal Circuit has consistently held that "particular embodiments appearing in the written description will not be used to limit claim language that has broader effect." *Innova/Pure Water,* 381 F.3d at 1117. Even where a patent describes only a single embodiment, absent a "clear intention to limit the claim scope," it is improper to limit the scope of otherwise broad claim language by resorting to a patent's

specification. *Id.*; *see also Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (citing numerous cases rejecting the contention that the claims of the patent must be construed as being limited to the single embodiment disclosed and stating that claims are to be given their broadest meaning unless there is a clear disclaimer or disavowal); *Comark Commc'ns, Inc. v. Harris Corp.,* 156 F.3d 1182, 1187 (Fed. Cir. 1988) ("Although the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims."); *Phillips*, 415 F.3d at 1323.

However, the Court also rejects Plaintiff's construction as it changes the term "determining" to "forming" and then inserts the phrase "determined." The Court is not convinced that such a substitution and/or insertion of words is correct.

Since this resolves the dispute between the parties, the Court finds that the term has its plain and ordinary meaning. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568). However, while the Court finds that this term has its plain and ordinary meaning, a construction may nevertheless be helpful for the jury.

The Court hereby construes "wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of boundaries of the target" to

mean "**wherein forming the at least one histogram includes determining the minimum and maximum x and minimum and maximum y coordinates of the boundaries of the target**."

M. "…the outline…" terms [claims 26 and 27 of the '445 patent]

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"adjust a size of the outline based on the histogram based on the first frame and the histogram based on the second frame" ('445 patent, claim 26)	Plain and ordinary meaning	Indefinite
"move a center point of the outline" ('445 patent, claim 27)	"calculate new x and y coordinates of the center point of the outline"	Indefinite

The disputed term "adjust a size of the outline based on the histogram based on the first frame and the histogram based on the second frame" term appears in claim 26 of the '445 patent.

The disputed term "move a center point of the outline" term appears in claim 27 of the '445 patent.

(1) The Parties' Positions

Plaintiff argues that a person of skill in the art would understand the above limitations with reasonable certainty in light of the surrounding claim language and specification, including understanding "the outline" in the context of the "targeting box" that is taught in the specification. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at pages 27-28. Regarding the "move …" term, Plaintiff argues that the specification shows as the object moves from frame to frame, the center of the outline is calculated and is shown as moving. *Id.* Plaintiff argues that the specification discloses locating the x and y coordinate center of a targeting box. *Id.* at 29.

Defendant argues that these terms are indefinite because they lack antecedent basis and fail "to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 29. Defendant argues that claims 26 and 27 of the '445 patent both depend from claim 24 and recite adjusting or moving "the outline." Id. However, claim 24 nowhere mentions an outline, which is mentioned by claim 25 which depends from claim 24. *Id.* But neither claim 26 nor 27 depends from claim 25; instead, each depends directly from claim 24. *Id.* Defendant argues that it would be improper or the Court to rewrite these claims to fix this dependency error. *Id.*

In its Reply, Plaintiff argues that these limitations are not indefinite because a person of skill in the art would realize that the "outline" is referring to a "targeting box" as described in the specification. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at pages 3-4.

(2) Analysis

It is clear that there is an antecedent issue to the term "the outline" in both of dependent claims 26 and 27 of the '445 patent. As it is written, both dependent claims 26 and 27 depend upon independent claim 24, but independent claim 24 does not recite the term "the outline." Thus, Defendant argues that dependent claims 26 and 27 are indefinite.

Dependent claims 26 and 27 both recite the term "the outline," but independent claim 24 (from which dependent claims 26 and 27 depend) does not use the term the "outline." However, dependent claim 25 does recite an "outline" term and is dependent upon independent claim 24. Claims 25, 26, and 27 are recited below:

> 25. The image processing system of claim 24, further comprising a display, and wherein the processing system is further configured to display **an outline** associated with the target at a display location based on the target location.

26. The image processing system of claim 24, wherein the processing system is further configured to adjust a size of **the outline** based on the histogram based on the first frame and the histogram based on the second frame.

27. The image processing system of claim 24, wherein the processing system is further configured to move a center point of **the outline** based on the histogram based on the first frame and the histogram based on the second frame.

(emphasis added). It is clear to the Court that there is a typographical error for dependent claims 26 and 27. In particular, it is clear that dependent claims 26 and 27 should have been dependent upon dependent claim 25, not independent claim 24 (which does not recite any "outline" term). This is consistent with dependent claims 4, 5, and 6 of the '445 patent, recited below:

4. The process of claim 1, further comprising displaying **an outline** associated with the target at a display location based on the target location.

5. The process of claim 4, wherein displaying **the outline** includes adjusting a size of **the outline**.

6. The process of claim 4, wherein displaying **the outline** includes moving a center point of **the outline**.

(emphasis added). For dependent claims 5 and 6, the antecedent basis for "the outline" is clearly recited in dependent claim 4; similar to independent claim 24, independent claim 1 does not cite the term "outline." Likewise, it is clear to the Court that the antecedent basis for the "outline" in dependent claims 26 and 27 is found in dependent claim 25. Without such a clarification, the dependent claims 26 and 27 would be indefinite, as there is no "outline" recited in independent claim 24.

The Court rejects Plaintiff's arguments that "the outline" term in dependent claim 26 simply has its plain and ordinary meaning without further resolution as to "the outline" issue. Further, the Court rejects Plaintiff's arguments that "the outline" term in dependent claim 26 is referring to a "targeting box" limitation found in independent claim 24. First, the term "targeting box" is never used in claim 24; instead, the claim simply recites "target" or "target location."

Claims 26 and 27 clearly reference "the outline." Second, the term "outline" is never used in the specification. The Court rejects Plaintiff's argument as contrary to the claims. While Plaintiff's proposed construction for the disputed term in claim 27 may be correct by itself (and is similar to the parties' agreed upon construction for the similar term in claim 6 of the '445 patent), such a construction does not resolve the issue of "the outline" term and its lack of antecedent basis.

The Court finds that this antecedent issue as to claims 26 and 27 is clearly a typographical error. The issue is whether this Court has the ability to fix a typographical error. The Court is mindful that it generally cannot redraft claims to cure a drafting error made by the patentee. S*ee, e.g., Lucent Technologies, Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1215, (Fed. Cir. 2008). However, the Court is also mindful that it is generally able to correct an obvious drafting error in a patent. *See, e.g.*, *CBT Flint Partners, LLC v. Return Path, Inc.*, 654 F.3d 1353, 1358 (Fed. Cir. 2011). The Federal Circuit has held that "[a] district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Id.* at 1358*, citing Novo Industries L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1354 (Fed. Cir. 2003). A finding by this Court that claims 26 and 27 should have recited their dependency on claim 25 instead of claim 24, similar to claims 4-6, does not require guesswork and is not a substantive correction to the claims. *See id.* The Court finds that there is no reasonable debate as to such a finding.[2]

The Court hereby finds the term "adjust a size of the outline based on the histogram based on the first frame and the histogram based on the second frame" of claim 26 of the '445 patent to

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[2] The Court assumes that the Plaintiff will file a certificate of correction at the USPTO in the near future correcting such a typographical error, thereby rendering this issue moot at that time.

have its **plain and ordinary meaning** and to be dependent upon claim 25 of the '445 patent. Because this resolves the dispute between the parties, the Court finds that the term does not require further construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

Consistent with the parties' agreed upon construction for the similar disputed phrase in claim 6 of the '445 patent (*See* Dkt. No. 150 at 11), the Court hereby finds the term "move a center point of the outline" of claim 27 of the '445 patent to mean "**calculate new x and y coordinates of the center point of the outline**" and to be dependent upon claim 25 of the '445 patent.

N. "successively increasing the size of a selected area until the boundary of the target is found"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
Plain and ordinary meaning	Indefinite

The disputed term "successively increasing the size of a selected area until the boundary of the target is found" appears in claims 7 and 8 of the '001 patent and claim 4 of the '134 patent.

(1) The Parties' Positions

Plaintiff argues that a person of skill in the art would understand this claim term with reasonable certainty in light of the surrounding claim language and the specification. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 25.

Defendant argues that "the boundary of the target" lacks antecedent basis for each of these claims. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 29. Claim 4 depends on claim 1, and claim 1 recites "boundaries" of the target (e.g., x and y minimum and maximum); Defendant argues that it is unclear which boundaries it is referring to and how much the selected area must increase to infringe. *Id.* Regarding claims 7 and 8, there is no recitation of "boundary" or "boundaries," which makes these claims even more ambiguous. *Id.* Defendant argues these terms are unclear, and a plain and ordinary meaning does not help. *Id.*

In its Reply, Plaintiff argues that a person of skill in the art would realize what the "boundary" of the target means. *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 4. Plaintiff argues that a person of skill in the art would realize that one may refer to portions of the boundary of a target as "boundaries." *Id.*

(2) Analysis

The parties' dispute is primarily related to the phrase "the boundary" of the disputed term, and in particular the lack of antecedent basis of the term and/or the confusion relating to whether it means some or all of the "boundaries" of the target. Plaintiff argues that it simply has its plain and ordinary meaning, while Defendant argues that it is indefinite.

The phrase appears in claims 7 and 8 of the '001 patent and claim 4 of the '134 patent. Those claims, in relevant part, are recited below.

[dependent claim 7 of the '001 patent]   The process according to claim 1, wherein forming the at least one histogram further comprises successively increasing the size of a selected area until **the boundary of the target** is found.

[independent claim 8 of the '001 patent] ….wherein forming the at least one histogram further comprises successively increasing the size of a selected area until **the boundary of the target** is found.

[dependent claim 4 of the '134 patent]   The process according to claim 1, wherein forming the at least one histogram further comprises successively increasing the size of a selected area until **the boundary of the target** is found.

(emphasis added). Adding confusion to this issue, claim 1 of the '134 patent, to which claim 4 is dependent on, recites "boundaries" of the target: "wherein forming the at least one histogram further comprises determining X minima and maxima and Y minima and maxima of **boundaries** of the target." (emphasis added.)

The claim language is unclear as to what is meant by "the boundary" of the target. Does the target have a single boundary? Does the target have a single boundary in each direction? Does the target have a plurality of boundaries (such as four boundaries as implied by claim 1 of the '134 patent)? The claims do not help, nor do the Plaintiff's arguments or construction provide any guidance. For claim 4 of the '134 patent, it is unclear which of the referenced four boundaries of the target is referred to by the phrase "the boundary" in claim 4 and by how much the "selected area" must be increased in order to infringe this claim.   Should the selected area be increased in only one direction, or should it be increased in each direction of the target? Again, the claims do not provide guidance. For claims 7 and 8 of the '001 patent, there is simply no antecedent basis at all for "the boundary."

Plaintiff's "plain meaning" construction does not help and does not address the lack of antecedent issue or the meaning of "boundary." Rather, Plaintiff merely states that one of skill in the art would not be confused by the references to the "boundary" of the target. Indeed, Plaintiff's

arguments make this issue even less clear, for in its Reply Brief (Dkt. No. 148 at page 4) it then argues that "portions of the boundary of a target" may be referred to as "boundaries." In general, Defendant's expert opines in a declaration that a target has four boundaries (min and max X and Y boundaries), and that one of skill in the art would not be able to determine which of these four boundaries is referred to by the phrase "the boundary" and by how much the "selected area" must be increased and whether only one boundary must be increased or all four boundaries increased. *See* Dkt. No. 138-7 at paragraphs 82-85. Plaintiff's technical expert opines in a declaration that a boundary is a "characteristic of a target," and can refer to a "directional boundary" as well as to the "entire boundary" of a closed shape, and that a target does not have four distinct boundaries in the context of the claims. *See* Dkt. No. 148-1 at paragraphs 15-16. The Court finds that Plaintiff's expert has failed to provide either a reasonable construction for this term or a reasonable scope of the invention.

The Court finds that one of skill in the art would not understand with "reasonable certainty" the scope of the invention and the bounds of the claims based upon these disputed terms. Accordingly, pursuant to the Supreme Court's holding in *Nautilus*, the Court agrees with Defendant's arguments that the claims when "read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." The Court rejects Plaintiff's arguments to the contrary.

The Court hereby finds the term "successively increasing the size of a selected area until the boundary of the target is found" of claims 7 and 8 of the '001 patent and claim 4 of the '134 patent to be **indefinite**.

O. "analyzing the at least one histogram over time"

Plaintiff's Proposed Construction	Defendant's Proposed Construction
"analyzing the at least one histogram as the histogram is computed based on new images"	Plain and ordinary meaning

The disputed term "analyzing the at least one histogram over time" appears in claim 39 of the '518 patent.

(1) The Parties' Positions

Plaintiff argues that the meaning is clear from the specification, which makes it clear that the at least one histogram is analyzed as it is computed based on new images. *See, e.g.*, Dkt. No. 133, Plaintiff's Opening Claim Construction Brief, at page 30.

Defendant argues that Plaintiff's construction and its briefing are inconsistent with each other and with the specification. *See, e.g.*, Dkt. No. 138, Defendant's Responsive Claim Construction Brief, at page 30. Defendant argues that analyzing "as the histogram is computed" (as required by Plaintiff's construction) cannot also be analyzing the histogram "over time" as the claim requires. *Id.* Defendant argues that such a construction is inconsistent with the specification's disclosure that the histogram is cleared between frames and thus does not exist across multiple frames. *Id.*

In its Reply, Plaintiff argues that the parties agree that a histogram is computed anew for each frame, i.e. "over time." *See, e.g.*, Dkt. No. 148, Plaintiff's Reply Claim Construction Brief, at page 10. Plaintiff argues that the at least one histogram is analyzed as it is computed in each frame based on new images to determine, for example, blink length. *Id.*

(2) Analysis

The parties' dispute as to this term centers on the phrase "over time." Defendant argues that this term simply has its plain and ordinary meaning, and the Plaintiff argues that it means "as the histogram is computed based on new images."

Claim 39 of the '518 patent is reproduced below in its entirety.

A process of detecting a feature of an eye, the process comprising the steps of:

acquiring an image of the face of the person, the image comprising pixels corresponding to the feature to be detected;

identifying a characteristic of the face other than the feature to be detected;

identifying a portion of the image of the face comprising the feature to be detected using an anthropomorphic model based on the location of the identified facial characteristic;

selecting pixels of the portion of the image having characteristics corresponding to the feature to be detected;

forming at least one histogram of the selected pixels; and

analyzing the at least one histogram over time to identify characteristics of the feature to be detected;

said feature being the iris, pupil or cornea.

(emphasis added.) The disputed claim language is straightforward. The claim requires forming at least one histogram and analyzing the at least one histogram "over time." The claim does not require the "over time" limitation to be "as the histogram is computed based on new images" as suggested by the Plaintiff.

The phrase "over time" is repeatedly used in the '518 patent specification. *See, e.g.*, col. 3, ll. 18, 30-32, 45; col. 4, l. 38; col. 27, ll. 24-28; col. 28, ll. 42-65. There is no suggestion that it means anything other than its plain and ordinary meaning. Overall, there is nothing in the specification that specifically construes and/or limits the phrase "over time," nor is there any intrinsic evidence that requires Plaintiff's construction. Overall, the Court finds that the Plaintiff's

citations and/or arguments relating to the specification are not helpful and not particularly relevant to the parties' dispute.

The Court finds that the term "over time" has no meaning other than its plain and ordinary meaning. The Court rejects Plaintiff's arguments to the contrary. Since this resolves the dispute between the parties, the Court finds that the term requires no further construction. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.") (*citing U.S. Surgical*, 103 F.3d at 1568).

The Court hereby finds the term "analyzing the at least one histogram over time" of claim 39 of the '518 patent to have its **plain and ordinary meaning**.

V. CONCLUSION

The Court adopts the above constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

Within thirty (30) days of the issuance of this Memorandum Opinion and Order, the parties are hereby ORDERED, in good faith, to mediate this case with the mediator appointed herein. As a part of such mediation, each party shall personally appear by counsel and by at least one corporate officer possessing sufficient authority and control to unilaterally make binding decisions for the corporation adequate to address any good faith offer or counteroffer of settlement that might arise during such mediation. Failure to do so shall be deemed by the Court as a failure to mediate in good faith and may subject that party to such sanctions as the Court deems appropriate.

So ORDERED and SIGNED this 21st day of June, 2017.

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RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE